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# How to write Japanese with LaTeX?

Asked 15 years, 2 months ago Modified 3 years, 2 months ago Viewed 90k times

80

I've recently started to use LaTeX but I've just encountered a problem, I tried searching it, although apparently no-one asked it before.

I'd like to write using Japanese input, but when I typeset, there can happen 3 things:

1. I get some error when compiling;
2. I get question marks where Japanese stuff should appear;
3. Nothing appears.

For example I had an example .tex file, compiled it and it worked, so I added some japanese in order to see "The author is [Japanese here]", but what I could see was "The author is [blank space]".

I've tried checking some guides, but I haven't found anything that could solve my problem (they are too old, or they don't talk about this at all).

Some minutes ago I tried compiling this:

Copy

```
\documentclass[12pt]{article}
\usepackage[T1]{fontenc}
\usepackage{CJKutf8}
\usepackage[romanian]{babel}
\usepackage[overlap, CJK]{ruby}
\usepackage{CJKulem}
\renewcommand{\rubysep}{-0.2ex}
\newenvironment{Japanese}{%
\CJKfamily{min}%
\CJKtilde
\CJKnospace}{}
\begin{document}
\parskip 3ex
\parindent 0pt
\begin{CJK}{UTF8}{}
\begin{Japanese}
わ
```

```
ねこ
\end{Japanese}
\end{CJK}
\end{document}
```

It compiles fine but, still same problem, nothing appears when typeset, even if I should see "ねこ". There are many Linux guides, but I have a Mac and apparently, there aren't a lot around...

EDIT: A small add, if I get this to work, is the solution related to other asian languages such as Korean or Chinese?

**languages** **cjk** **japanese**

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edited Apr 9, 2023 at 16:32
CampanIgnis
**4,836** 2 26 45

asked Apr 11, 2011 at 8:28
Alenanno
**38.1k** 6 85 182

@Leo Liu, @Nyiti, @Bob BeckettGuys, I found out that probably it's a matter of encoding. If I write 丸 (example) I'll get nothing like I said but if I write ¥›, it will appear properly on pdf! :| – Alenanno Apr 13, 2011 at 10:02

It's testament to the quality of this site that when Googling 'japanese in latex', this is the first search result. (As opposed to some of the more questionable results which appear further down the list) – Bill Cheatham Jun 9, 2015 at 14:12

## 6 Answers

Sorted by: Highest score (default)

81

# 1. XeLaTeX

For XeLaTeX, the document should be saved in UTF-8 encoding.

## 1.1. `xeCJK` package

I advice you to use XeLaTeX with package `xeCJK`. An example:

Copy

```
\documentclass{article}
\usepackage{xeCJK}
\setCJKmainfont{MS Mincho} % for \rmfamily
\setCJKsansfont{MS Gothic} % for \sffamily
\begin{document}

\section{日本語}
お早う

\textsf{こんにちわ}

\end{document}
```

See manual of `xeCJK` and `fontspec` for more information.

Chinese and Korean work the same. In fact, `xeCJK` is originally designed for Chinese by Prof. 孙文昌.

`xeCJK`：http://mirrors.ctan.org/macros/xetex/latex/xecjk/xeCJK.pdf
`fontspec`：http://mirrors.ctan.org/macros/latex/contrib/fontspec/fontspec.pdf

## 1.2. `zxjatype` package

`zxjatype` internally calls `xeCJK`, with some configurations for Japanese. You can also use `zxjafont` package to use some

predefined fonts. It is easier to use compared to raw `xeCJK`. An example:

Copy

```
\documentclass{article}
\usepackage{zxjatype}
\usepackage[ipa]{zxjafont}
\begin{document}

\section{日本語}
お早う

\textsf{こんにちわ}

\end{document}
```

`zxjatype`：http://zrbabbler.sp.land.to/zxjatype.html

## 1.3. `bxjsclasses` with `zxjatype`

`bxjsclasses` bundle provides some Japanese local classes. It can be used with different TeX engines.

Copy

```
\documentclass{bxjsarticle}
\usepackage{zxjatype}
\usepackage[ipa]{zxjafont}

\begin{document}

\section{日本語}
お早う

\textsf{こんにちわ}

\end{document}
```

```
\end{document}
```

# 2. LuaLaTeX

For LuaLaTeX, the document should be saved in UTF-8 encoding.

## 2.1. `luatexja-fontspec` package in `luatexja` bundle

`luatexja` bundle provides Japanese support for LuaTeX. A simple LaTeX example:

Copy

```
\documentclass{article}
\usepackage{luatexja-fontspec}
\setmainjfont{MS Mincho} % \mcfamily
\setsansjfont{MS Gothic} % \gtfamily

\begin{document}
\section{日本語}

お早う

\textgt{こんにちわ}

\end{document}
```

## 2.2. `ltjsclasses` classes in `luatexja` bundle

`ltjsclasses` provides some Japanese document classes for convenience. An example:

Copy

```
\documentclass{ltjsarticle}
```

```
\usepackage{luatexja-fontspec}
\setmainjfont{MS Mincho} % \mcfamily
\setsansjfont{MS Gothic} % \gtfamily

\begin{document}

\section{日本語}

お早う

\textgt{こんにちわ}

\end{document}
```

# 3. upLaTeX + `ujclasses`

upLaTeX is a Japanese TeX format. It needs UTF-8 encoding.

An example:

Copy

```
\documentclass{ujarticle}

\begin{document}

\section{日本語}

お早う

\textgt{こんにちわ}

\end{document}
```

Compile with

```
uplatex foo.tex
dvipdfmx foo.dvi
```

# 4. pLaTeX + `jsclasses` (Relatively Old)

pLaTeX is a Japanese TeX format. **Documents should be saved in SJIS encoding**. Documentation in English is available here.

An example:

```
% SJIS encoding
\documentclass{jsarticle}

\begin{document}

\section{日本語}

お早う

\textgt{こんにちわ}

\end{document}
```

Compile with

```
pdfplatex foo.tex
```

or

Copy

```
platex foo.tex
dvipdfmx foo.dvi
```

## 5. `CJK` package (Obsolete)

Older `CJK` package is still useful. It works well with PDFLaTeX and LaTeX (Dvips, dvipdfmx). If the document has only a few wide characters, `CJK` package may be a reasonable choice with better compatibility.

Be sure you have installed the proper CJK fonts for `CJK` package. Typically, this is not done. TeX Live and MiKTeX have a `wadalab` package, install it when necessary. (Also `ipaex` and `ipaex-type1`) Then you can use:

Copy

```
% UTF-8 encoding
\documentclass{article}
\usepackage{CJKutf8}
\begin{document}
\begin{CJK*}{UTF8}{min}

\section{日本語}
お早う

{\CJKfamily{goth} こんにちわ}

\clearpage\end{CJK*}
\end{document}
```

See `$TEXMF/tex/latex/cjk/texinput/UTF8/c70*.fd`, `$TEXMF/tex/latex/cjk/contrib/wadalab/c70*.fd`, etc. for pre-installed CJK font families. Frankly speaking, these free Type1 CJK fonts are not very good. It is better to install the fonts yourself.

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edited May 16, 2014 at 18:26 — answered Apr 11, 2011 at 10:28

kiss my armpit — 38.1k 37 233 495

Leo Liu — 80.5k 13 228 290

Thanks a lot! I'll give this all a try... It might take some time though, due to my noobness :) I'll let you know. – Alenanno Apr 11, 2011 at 10:58

If we use XeLaTeX instead of PDFLaTeX, do we lose features provided by `microtype`? – kiss my armpit Mar 6, 2012 at 1:10

@Damien: Develop version of `microtype` partly support XeTeX. – Leo Liu Mar 6, 2012 at 4:51

1 @user46007: I've no idea. I use TeX Live 2013 (updated with TeX Live Manager), and all these code was tested. – Leo Liu Feb 22, 2014 at 16:34

10 Not related to LaTeX, but it should really be こんにちは instead of こんいちわ – A.Ellett Sep 22, 2018 at 1:55

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This blog post outlines Chinese-Japanese-Korean support in LaTeX: link

This is a minimal working example:

Copy

```
\documentclass{memoir}

\usepackage{CJKutf8}

\begin{document}

\begin{CJK}{UTF8}{min}未練なく散も桜はさくら哉\end{CJK} \\
without regret \\
they fall and scatter\ldots \\
cherry blossoms

\end{document}
```

You can compile it with the `latex`, `dvips`, `ps2pdf` combo or with `pdflatex` as well.

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edited Jul 15, 2017 at 12:53 — David Carlisle 844k 76 1.7k 2.6k

answered Apr 11, 2011 at 12:54 — Gambhiro 3,564 2 28 36

Thanks for the link, the site is loading so slow though :D I'll wait until it's done... Hopefully. :) – Alenanno Apr 11, 2011 at 18:07

Sorry, it took quite some time, honestly I left it lol... I chose you because your example worked. :) – Alenanno May 8, 2011 at 18:00

I hope it works out, good luck with your project! – Gambhiro May 9, 2011 at 6:45

Characters are working, I have some new problems sometimes (things like size, font choice, etc) but there is plenty of material... I might be able to solve it by myself :D – Alenanno May 9, 2011 at 8:02

3 Please don't use the default `min`, `goth` CJK fonts for Japanese. They are not professional. Instead use fonts provided by ipaex-type1 package. In Ubuntu it is provided by `texlive-fonts-extra` package. – eiennohito Jun 27, 2019 at 0:58

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You might also try XeteX with the genzi.sty package, which is specifically for Japanese.

If you read Japanese well, Google "luajalayout" and "LuaTeX-ja." A pdf sample of the output looks very good. It appears to require a separate installation from the standard LuaTeX, but I'm not sure.

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edited Apr 12, 2011 at 18:58 — chl 9,450 7 46 51

answered Apr 11, 2011 at 22:31 — Bob Beckett 203 2 6

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# 2020 Update

Thanks to a comment above from `eiennohito`, I've gotten a professional looking Japanese font working on Arch Linux with `pdflatex` (although it should work for other distros).

## Necessary Packages

- `texlive-bin` (provides `pdflatex`)
- `texlive-fontsextra`

The latter should install (among others) the following file:

Copy

```
/usr/share/texmf-dist/tex/latex/ipaex-type1/c70ipxm.fdx
```

This is the font we want. Now, in our `.tex` file, using this font is as simple as:

Copy

```
\usepackage{CJKutf8}
\begin{document}
\begin{CJK}{UTF8}{ipxm}

\section{私の人生}  % Works in section titles too.
田舎に派遣されました。

\end{CJK}
\end{document}
```

A normal run of `pdflatex` on this file should succeed, and the resulting `.pdf` should have nice, professionally looking Japanese text within.

**Note:** If you get other strange effects like `??` instead

**Note:** If you want other text effects like `\textbf`, use `ipmxa` instead.

# References

- https://ja.overleaf.com/learn/latex/Japanese#CJKutf8_package_with_pdfLaTeX
- https://ctan.org/pkg/ipaex-type1

2

Another option is to use `babel`. As of 2020, this translates strings such as "Table of Contents" and allows you to select many different styles of counters (such as Hirigana, Katakana, Iroha and more).

Mixing Japanese with other scripts, such as Arabic or Devanagari, and automatically selecting the correct language and font without language and tagging, is possible in `babel`, and not other packages. In theory, the `translator` and `translations` packages support Japanese dictionaries and would automatically select them, but as of 2020, you would need to write them yourself.

It also has the advantage of allowing you to mix Japanese and Chinese in the same document, although if you do this, you unfortunately will need to turn off the feature that automatically changes the language when it sees characters from a CJK script. The Original Sin of the Unicode Consortium was thinking that 16 bits would be enough forever if they just forced Japan to share the same codepoints as China and Korea.

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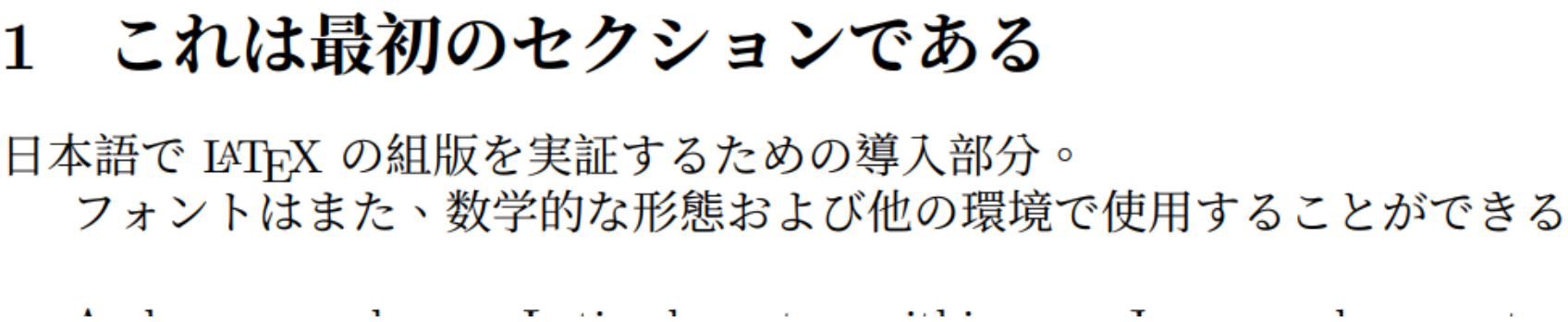
answered Aug 3, 2020 at 23:41

Davislor
**48.9k** 3 93 141

2

Copy

```
\documentclass{article}
\usepackage{xeCJK}
\setCJKmainfont{Noto Serif CJK TC}
\setCJKsansfont{Noto Sans CJK TC}
\setCJKmonofont{Noto Sans Mono CJK TC}
\begin{document}

\section{これは最初のセクションである}
日本語で \LaTeX の組版を実証するための導入部分。

フォントはまた、数学的な形態および他の環境で使用することができる

\bigskip

And you can also use Latin characters within your Japanese document.

\bigskip

\begin{verbatim}
このテキストは、別のフォントを持つことになります

This is a verbatim environment using a monospaced font.
\end{verbatim}
\end{document}
```



And you can also use Latın characters wıthın your Japanese document.

このテキストは、別のフォントを持つことになります

This is a verbatim environment using a monospaced font.

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